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regularity they might be taken for volcanic
cones. Now these give oddly placed green
hills, Thorpe Hall, Elboston, Hehelen, Carden &
Swinden, been formed—as have the endless
hilly heights at the foot of the Spanish
Brevelas Mountains. By the washing from
the hills behind them swept down in time
of flood through many generations? The
structure of the lesser hills of this shape
which we see broken into here & there
would support this theory, as they consist
of rounded, water-worn stones, pebbles & boulders
of fine sand.

But enter the caverns in Hale Thorpe & Elboston.
You find that these hills are built of Proterozoic
Mountain Limestone; that is to say, they consist
not of mere superficial debris, but of calcareous
rock wherein fossils of many species are
thickly embedded. They are fragments, then
of an ancient sea-bottom, formed, like the sea
which is now raising the floor of the Atlantic
by a perpetual slow rain of microscopic shells.
Therefore, even from having been built up
by running water, these hills present
themselves as ancient landmarks
outworks, which proved strong enough
to resist the floods ^{that} slowly swept
away the thick layers of Mountain Limestone
wherein the valley was at one time filled, to
the level, at any rate, of their summits.

This is only one of many structural problems which the aspect of this interesting neighborhood presents.

Take, for example, the brow of the hill which rises behind Grassington & make your way through the pastures towards Dip Sear: as you get higher, the sweet-air & the close springy turf remind you of the ^{sunlit} South Downs. To the right, you come upon a wide reach of flat stones, bedded in the earth, giving an aspect of desolation to the scene. Is it - a huge natural cemetery, where every grave contains a son of Adam, the memorial stones lying so close that they touch one another? No: are these stones without inscriptions, recording a history that even the unlettered may spell out: - curious curves & sweeping lines & worn hollows - water marks, all, evidencing the rippling of a river in a wonderful way. It is as if every indelinite, waving, curving, unmeted, beautiful line in the flowing water had made an indelible impression in the rock. And these smooth, rounded cavities, - one can almost see the pebbles at work, whirled round & round by the eddying water, & sweeping away the bed that holds them with every whirl; though even the pebbles are elsewhere & only the hollows ^{are} ^{any} ^{now} ^{here} ^{remain}.

And what a noble river it must have
been! Three times as broad as the Wharfe. How
sings your practical companion. How could such
a river flow at the top of a high hill or plateau?

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Such as we are upon, & these stones are on a
level with the land on either side, where all
the marks which should keep your tracks in?
The very difficulties offer additional evidence
of the amazing part which running water
has played in the sculpture of the land.
We find it easier to believe in some per-
manently processes of upheaval & depression
than that the river has carved out - for them -
these the wide valleys, at the bottoms of which
we see them flowing as the meek threads.
From the direction of the markings, the same
on all the stones, we perceive that this river
on the hill flowed at right angles with the
course the Wharfe now takes. That such
a river existed ^{would} appear ~~unconceivable~~ ^{than that of living water}; but
other conceivable agency ^{than that of living water} could these ripple
marks in the rocks be accounted for. But
rivers flow in valleys. Therefore the flat
highland on which we stand was once a
valley. We must construct a new landscape
without a Wharfe river, fill up the wide
dip in the moor ^{which}, call Wharfe-dale, raise
banks for our ancient river, & a gradual
slope of the land towards it, & water-partings
as we please, on either hand, we need be no
loss for a pattern. What has become of those
ancient elevations? We can only offer
a general suggestion, ^{namely that} ~~that~~ running water
has worn away, & carried elsewhere, the whole.
The waters have made new channels for themselves.
The bonny Wharfe has appeared, & the, ~~ancient~~

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its valley at a lower level than that of the
ancient river; though the general aspect of
the landscape may be the same as of old.
The direction of its main features has been
altered. In considering these modifications
of the landscape, two things should be borne
in mind. That they require for their elaboration
the almost limitless 'periods' claimed by the
geologist; that the magnesian limestones of
which the district is composed is peculiarly
friable. The carbonic acid gas contained in
waters, even in the purest rain water, acts
as an irresistible solvent upon carbonate
flints: and this single fact accounts
for the endless curious phenomena
common to districts where Mountain-lime-
stone predominates, most of which are strikingly
presented in the West Riding; - underground
streams, issuing full grown from the face
of rock caverns, ravines, 'coves' & 'sears',
which are sometimes awful, ruinous
grocks & sometimes as wildly fantastic; -
all of them owing their origin to the fact that
water, underground & above ground, has the power
of slowly wearing away the limestone rock which
it washes.

To return to the present aspect of the country and
which has led to this long dissection, we
have noticed its dreary aspect; but apart from
the interest attached to the markings in
the clunes, the aspect has a beauty of its own.
A bright green ground of hertatongue attracts the

eye

exp. we look closer, & behold, ^{the opening} very opening
between the stones is a lovely fernery, shut-
in & hidden by rocky walls; & here & there are
beauteous little cave dwellings, towers of the
fairies, where roof, walls, & floors are hung with
feathery ferns, - long lucid & elegant fronds of
the black maiden-hair spleenwort. The elegant
beech fern, mountain parsley shrub-like fern,
heart's tongue & the limestone polypody. It is
impossible to do justice to the exceeding
loveliness, the tender effect, of these woods,
where Nature has displayed her ~~own~~ ^{still} taste in
combination & arrangement, where every
graceful feathery frond, sheltered like from
sun, frost & storm, is delicately green &
perfect as ^{near as} the most cherished ~~existence~~.

A little further, ~~we come to~~ ^{we are at} the base
a huge mass of limestone which would
attract much attention in a neighborhood
of a ^{rather} different character, but here it is a
common thing for the rugged framework
of the hills to be laid bare, & for the long lines
of fells to end in rounded headlands,
with walls steep & bare, & overhanging banks.
Such is the general form of this cliff; it
rises sidly feet in perpendicular height
& the brow, scarred with many a deep
wrinkle, marking the lines of stratification,
overhangs the base by about fifteen feet.
From the point, we look down into a deep ravine
the

the sides pebbly with bracken & bramble, hardly
of a glove. & at the bottom, a tiny stream
which breaks out from the base of the rock, for
this gully is but an opening in the cliff.
lovely as the chimneys of the Sal of Wright.
The prospect is glorious; to the left is
spread the green Wharfe valley with the dales
that open into it, & the hills that hem it in;
to the right, fell after fell, stretching in long
lines away into the distance, & crowding
close upon one another, that only lines
of darker shade divide them; therein lies
the imaginative charm of the scene. For we
know that, climb the fell above it, each
dark line of shadow spreads out into a
lovely valley, watered by its own stream,
& ~~its~~ ^{with} ~~its~~ ^{its} wooded, bright in the sunshine,
with many a clustering village &
scattered farms ^{to lend it} ~~filled with~~ ~~with~~ human interest.
A peculiar feature in the scene is the
fortified appearance of the fells, whose upper
slopes are terraced, & defended by breast-work
of gigantic masonry; at least, such
is the effect produced by the thick layers
of protruding rock. ~~It is not the case that~~

Upper Wharfedale is a valley hollowed out of a wonderfully solid & deep layer of mountain limestone, varying from four hundred to a thousand feet in thickness. And this peculiar formation, which extends, indeed, to the whole of Craven, is not a fact interesting & important ~~only~~ to the Geologist; it marks out a tract of country of distinct aspect & character; for it is hardly enough considered how much the contours, colours & picturesque effect of a landscape, ^{as well as the economic value of the land,} depend upon its geological formation. Thus, the mountain limestone supports a peculiarly rich carpet grass, more vividly green, more luxuriant in growth, than even the clove springs turf of the Chalk downs. Craven is, in consequence, a grazing country; exquisite lawn-like slopes of meadow & pasture ~~stop~~ ^{fall} gently to the rivers; & perhaps throughout England there is hardly a more truly 'emerald vale' than that of the upper Wharfe.

The reader is sensible, perhaps, that though pleasant to the eye & good for ^(producing) food, this verdant landscape would demand some elements of contrast to exalt it into beauty; these, also, are afforded by its geological structure.

The limestone which supports so soft a covering is apt to wear into a scarp, a face more grim & scarred, more largely exposed than is presented by any other rock; even frequent scars command every elbow of the valley like vast & forbidding natural fortresses.

Again, the fine appearance of the soft green lower hills leaning against the barren bosom of brown fells in the back-ground is due to the fact that millstone-grit covers much of the high ground of faversham. On the east, the millstone grit ranges of Great Wharfedale, Conistone Moor & Grassington Moor, hem in the Wharfe valley at no great distance from the river; these high fells & wide peat-moors are thickly covered with heath, brown or purple according to the season, but always of a deep harmonious tints which the atmosphere softens into mountain bloom.

Even delight-opens new effects of colour & outline we must add that afforded by the freshness & variety of the impressions received in a country where we appear to be brought nearer to the beginnings of things. In these rugged limestone districts we find ourselves in Nature's workshop; we surprise her in the midst of her labours, surrounded by rough ^{early} ~~late~~ ~~that~~ ^{that} ~~that~~ has been as it be. One cannot fail to theorise, speculate, attempt to account for this & that unwounded appearance, even when theories are unable where ^{floods of} ~~water~~ ~~will~~ have wrought such strange marvels. And this particular point of Wharfedale, typical, presents in a very marked way the characteristics of such a district, a fact which must be our apology for detaining the reader as long in the rough breathing of this region. ^{It has been of historical or romantic interest to record it than any other part of the valley we purport to describe.} ^{Ch. Webb} ^{4th. 1841}